

-Meeting Summary-

Day 1: October 20, 2011 - (9:00 a.m. – 4:30 p.m. PDT)

1. Welcome

The meeting was called to order at 9:00 a.m., September 1, 2011, by the Chair of the Delta Independent Science Board (ISB), Dr. Richard Norgaard. Seven members of the Delta ISB were present for the meeting: Brian Atwater, Tracy Collier, Michael Healey, Judy Meyer, Jeffrey Mount, Richard Norgaard, and John Wiens. Elizabeth Canuel and Edward Houde called in to the meeting from teleconference locations. Vince Resh called in as a member of the public to listen to the conversation while traveling.

No new conflicts or need for new disclosures were disclosed for any of the present Board members.

Delta Science Program Staff in attendance:

Cliff Dahm, Marina Brand, Lauren Hastings and Gina Ford

Dahm also welcomed the Delta ISB and provided direction to them regarding the task before them, that of reviewing programs over which they have oversight. He advised the Board to consider 1) data management needs, 2) appropriate identification of key questions, and 3) providing input on metrics used. These reviews will become part of the Program's record. Dahm also stated that the Delta ISB should use this meeting to look at the adaptive management component of each program and identify where it may be breaking down.

Ford provided a brief explanation to the public that the Delta ISB was testing the use of the webinar program WebEx. The test was not made public, but it is the intention of the Board that if all goes well WebEx will be incorporated into future Board meetings.

Norgaard stated that the review of these Programs may inform development of the Delta Science Plan to be prepared by the Delta Science Program (DSP).

2. Water Supply

a. Delta Science Program Staff Presentation

Brand provided the Delta ISB with a summary of the responses that were received from programs that were related to water supply.

b. Discussion with Agency Representatives

There was some initial conversation among the board members to determine if all programs that deal with water supply were represented by the responses that the DSP had received. It was

determined that the Bureau of Reclamation was not represented, and that they had not been solicited for information by the DSP.

The Board then asked that those who were there to speak on behalf of a water supply program, to join them at the table, and to introduce themselves. They were:

- Adam Ballard, on behalf of Les Grober, Division of Water Rights, State Water Resources Control Board (SWRCB)
- Tracie Billington, Statewide Integrated Regional Water Management Program Department of Water Resources (DWR),
- Peter Brostrom, Division of Statewide Integrated Water Management, DWR

Meyer opened the discussion by asking about the scientific review in the programs. Billington answered that the legislation that established the Integrated Regional Water Management (IRWM) Program, which is a grant program, included some guidelines. Generally speaking, science is not used for issuing grants for the replacement of out-of-date equipment. However, science is used when the grants involve restoration activities. The grants undergo an internal review selection process with no other scientific oversight. Meyer then asked if there is an effort to systematically review funded projects to assure completion. Billington replied that there is no systematic review by state staff; however, the projects are obligated by contract to report all their data to the state databases.

Mount stated that the State Water Plan collects a lot of data, and asked if it is a repository for all water information. Brostrom replied that reporting requirements on how to better integrate and synthesize data are included in the State Water Plan.

Dahm stated that the federal government, USGS in particular, is cutting back funding for monitoring and removing stations and asked the program representatives if they knew if the state was doing the same? Billington answered that she did not know but DWR has had to cut back their work due to reductions in the General Fund.

Mount asked what the programs do with the data once they are collected. Billington replied that DWR is mandated to make the data available to the public and do so. They lack funding to do anymore. Mount then followed up with asking if funding for these programs is reliable. Brostrom answered that due to multiple legal requirements, even if grant funding was no longer available, the users would still be required to submit agricultural and urban water management plans. Billington added that some of the IRWM plans might no longer be prepared because they are not required by law. IRWM plans are integrated in that they address water quality, water supply, habitat, ecosystem and other issues.

Dahm asked how changes in amounts and type of precipitation due to climate change are being monitored with respect to supply. Brostrom replied that these are highly considered variables within the State Water Plan, but could not comment as he is not involved with the State Water Plan. Billington added that the IRWM programs are required to include climate change adaptation and that DWR is close to releasing a handbook on climate change. Ballard also acknowledged that climate change is being considered in the development of the SWRCB flow objectives.

Mount wanted to know when the SWRCB would have the Bay Delta Plan done and was told by Ballard that the SWRCB plans to have a hearing to adopt their objectives in June 2012. In June of 2013, the SWRCB will provide their flow criteria objectives for Delta outflows with adoption scheduled for June 2013 and implementation starting June 2014. Norgaard asked Ballard how well the SWRCB is staffed to deal with the development of these objectives. Ballard replied that the SWRCB currently had five staff working on this issue, but would be adding approximately seven more in another unit that would also be working on the objectives.

A discussion among Norgaard, Healy, Mount and Ballard occurred on the use of science, X2, Delta outflow standards, and the BDCP. Board members indicated that use of best available science and peer review will be necessary to validate outflow standards. The State Board will independently review X2 standards established by the issuance of biological opinions and take a broader approach than BDCP. A new public trust unit was recently established to develop flow standards for the tributaries. On the Delta outflow standards published in 2010 by the State Board, the report did not consider beneficial uses other than environmental flows and demonstrated that more flow is needed in a more natural pattern.

Hastings asked Ballard what the current status of the Vernalis Adaptive Management Plan (VAMP) is and if a new program or plan was being developed. Ballard responded that VAMP is near its end with no next steps identified. There was a brief discussion regarding an independent review of VAMP that was facilitated by the Delta Science Program in 2010.

Norgaard then asked all the program representatives what they thought the Delta ISB should review, and how best to bound that review. Collier wanted to know what type of review would help the agencies the best. Billington responded that it depends on what the Board is trying to accomplish and/or evaluate. Billington suggested that it might be more beneficial to look at high level programs such as the Flood Program and the State Water Plan and to stay away from the “operational” types of programs. She also added that scientific needs do not change how they operate, whereas funding and legislative mandates do.

Wiens asked the Board members if they might be better served looking at how science is used within programs to advance components of the Delta Plan. He stated that as a Board they did not

want to do peer review on top of existing peer review. The Board needs to determine the appropriate scale of the review and he saw their role as one of asking about the use of best available science, determining how the science is made available to inform plans and programs, and determining how adaptive management is incorporated.

Healey asked how the coequal goals have influenced state programs. Ballard explained that the SWRCB already considers supply and ecosystem needs in their determinations and objective criteria – so the idea of the coequal goals is already considered. He also stated that the SWRCB is required to not only consider those variables but to look at a range of circumstances that influence them and then consider what impacts may take place depending on a given objective. Mount concluded that the Board should be reviewing programs at a higher level and offered that one review could include the state and federal water projects and another review would be of the State Water Plan.

Mount asked if any of the programs are seeing more “green design” on storm water reuse or infrastructure. Brostrom replied that he had seen it especially in Southern California permit applications for re-use programs. Billington said that there is a specific SWRCB grant program that funds “green design” and advised looking into that specifically for answers. There is also a need to consider that some of the issues that come from “green design” can lead to additional water related issues for contaminant re-entry.

Houde asked if the state representatives felt constrained by science and how science could help them. Billington replied that development of a statewide integrated data management system would be very helpful. Wiens commented that they’ve heard a lot about the need for data management. Data management is necessary to implement effective adaptive management and there is a need to have the “right” type of data. The “right” data being the data that are most efficient and cost-effective for answering the question at hand. Collier agreed with Wiens, and added that it often takes years to set up a system to manage the data in a way that is universal, that often it isn’t the best use of time, and there is usually a lot of resistance if it needs to be changed later.

c. Public Comment Specific to this Discussion

Public comment provided by Mark Rentz, Association of California Water Agencies: Rentz provided a list of additional programs that might be considered under the heading of Water Supply. The additional programs suggested were: those associated with the State and Federal Endangered Species Act (ESA) such as Federal Biological Opinions and Recovery Plans, Central Valley Project, State Water Project, SWRCB Flow Criteria Development, and the Federal Energy Regulatory Commission (FERC) relicensing of facilities because they address flow criteria. He noted that the groundwater elevation monitoring program used a “carrot” approach that worked well and his agency had worked in partnership with DWR to provide educational

meetings/workshops for the public. He further commented that the use of integrated planning is increasing. He also commented on Norgaard's comment on "boundaries of science" and stated that the Board should develop criteria for evaluating "best available science". He also stated that his association had provided the Delta Stewardship Council with an alternative plan for the Delta Plan and that the Board should assist the DSC in determining how the Delta Plan is achieving the coequal goals.

3. The Delta Ecosystem

a. Delta Science Program Staff Presentation

Brand provided the Delta ISB with a summary of the responses that were received from programs that were classified as falling under the category of the Delta Ecosystem.

b. Discussion with Agency Representatives

The Board then asked that those who were there to speak on behalf of a Delta Ecosystem program join them at the table and introduce themselves. They were:

- Pat Brandes, US Fish and Wildlife Service (USFWS)
- Ramon Martin, USFWS – Anadromous Fish
- Val Connor, State and Federal Water Contractors Association (SFWCA)
- Dave Zezulak, Ecosystem Restoration Program (ERP), Department of Fish and Game (DFG)
- Stephen Chappell, Suisun Marsh Plan, DFG
- Erwin Van Nieuwenhuyse, US Bureau of Reclamation (USBR)
- Anke Mueller-Solger, Interagency Ecological Program (IEP)

The Board asked what science is needed and/or missing, and received a variety of responses:

Zezulak explained that ERP has funded over 600 grants, not all of them having been completed. He felt that it is difficult to evaluate success of the ERP since the funding process results in small-scale projects that are distributed throughout the Delta and its watershed. He asked how these projects can be scientifically sampled.

Mueller-Solger told the Board that the needs of IEP have shifted over the years. IEP collects monitoring data to help agencies respond to changes in the ecosystem thereby helping with the science needs of others. There are gaps in the monitoring, particularly microbial monitoring, and there is no connection to the social environment. She felt that there needs to be a way to prioritize research needs among all nine federal and state IEP agencies.

Van Nieuwenhuyse agreed with Mueller-Solger and added that there is a lack of unity that often leaves whatever can be considered the "best available science" as something that is unintelligible. He also felt a need to develop a simple model for the entire system.

Chappell stated that the Suisun Marsh Plan is an action plan focused on habitat restoration that will contribute to the recovery of the Delta. He wondered if they will have sufficient resources to ask the questions needed to inform future actions and noted that there is a tendency to focus on habitat acreages rather than ecosystem outcomes.

Connor asked if massive restoration efforts will really work, like those proposed by the draft Bay Delta Conservation Plan. She thought there needed to be indicators established to evaluate if improvements have resulted from the restoration. She also agreed with Van Nieuwenhuysen about needing unity within the Delta science community, and advocated the principle of “one” science that she credited to Peter Goodwin, candidate for the position of Delta Lead Scientist. She then brought up conditions for state scientists, who are expected to do much of the work, but are generally overworked due to understaffing, are underpaid, and without the tools they need to do a good job. As for what is needed, she pointed out that various committees and government bodies have asked these science related questions before and generated reports (three) with recommendations. She suggested reviewing those reports before moving forward.

Weins commented on Connor’s statements about state scientists, he felt that this is a critical point and shows erosion of a support system.

Martin explained that a process that streamlines the permit approval process by State and Federal governments needs to be developed. The time required to obtain permit approvals delays monitoring efforts and other research and often, funding is lost. He also agreed with the need for integrated database standards.

Brandes pointed out that funding is a critical component for many research programs, in that it isn’t always stable or long-term. Long-term funding is needed for monitoring to be implemented on a long-term basis. She noted that experimentation at the extremes would provide much needed information but this is prevented by institutional roadblocks. She also suggested a need for more interdisciplinary teams to evaluate issues and develop study designs.

Mueller-Solger also added to her prior comments that any reviews that the Delta ISB conducts of IEP programs could potentially be done in conjunction with reviews by the Science Advisory Group (SAG) that is affiliated with IEP.

Meyer then asked if any of the other programs represented had a SAG or ISB type of oversight board. Other than IEP, none of the programs represented had such a board. The Federal agency representatives indicated that they use outside experts for peer review or they hire groups like the Delta Science Program to facilitate independent panel reviews.

Mount, Van Nieuwenhuyse and Connor had a discussion about the summer of 2011 being a “terrible summer for science” which Mount felt was due to Judge Wanger’s decisions and criticisms of the biological opinions, without much scientific background to justify it. Mount asked Van Nieuwenhuyse if he thought that the current system should be reorganized or if it should continue as is. Van Nieuwenhuyse replied that he would set up two main groups to deal with science in the Delta, one for modeling and the other as a centralized research proposal center to review and coordinate new research. But if he could only do one thing he said that he would move the focus back to the fundamentals and basic science.

Mueller-Solger added that there is also a need to clarify the basic roles of people at work in the Delta. What do the scientists do? What are their goals and objectives? Maybe the Science Plan that is going to be written by the Delta Science Program can address some of this, or at least start to. She also commented that there is a need to translate scientific information into something that is easily understood and used by management, decision makers, and regulators.

Collier reiterated Van Nieuwenhuyse’s statement about having one simple model for the Delta and wanted to know if the science was at a point that conclusions could be made about the value of the restoration that has been done to date. He also noted that Chappell had said that restoration in Suisun Marsh *will help* the Delta Ecosystem. Collier thought that Chappell’s *will help* should be *might be helpful*. Hastings explained that IEP has not been tasked with monitoring outcomes of restoration activities, and that nobody is really tasked with it as a monitoring effort. Martin said that USFWS is using models to assess if they are reaching the Fisheries Restoration Project (FRP) doubling goals. Connor added that due to the three-year funding restrictions, determining success is impossible as long term monitoring cannot be provided for. She suggested using a top down approach to restructure funding restrictions to address this issue. Hastings agreed with Connor and stated that ER P1 in the Delta Plan was drafted to address this long-term monitoring issue. She also stated that a centralized entity should be established to specifically monitor the big picture.

Norgaard asked Mueller-Solger what projects/programs she thought would be monitored if the only monitoring that was done was that performed by the IEP. She explained that IEP does not usually focus on specific projects, so those individual efforts would be missed. Also restoration is not included as a part of IEP’s research or monitoring efforts and neither is work on contaminants for the most part. Therefore, all 34 of the CVPIA programs with the exception of those related to fish salvage studies, those programs supported by the ERP, and those associated with monitoring contaminants would no longer be monitored.

Dahm reminded the Board that one of the coequal goals is to protect, restore and enhance the Delta ecosystem. He noted that there are five habitat types in the Delta and asked if there was

any monitoring to determine the effectiveness of habitat restoration. Zezulak responded that the Point Reyes Bird Observatory and to some extent The Nature Conservancy (TNC), monitor impacts on avian species and evaluate any indications of improvement. Martin said that their monitoring for federal projects is specific to the project. Connor described the California Rapid Assessment Method (CRAM), which is a standardized tool for assessing the health of wetlands and riparian habitats. CRAM is designed for assessing ambient conditions within watersheds, regions, and throughout the State. It can also be used to assess the performance of compensatory mitigation projects and restoration projects.

Hoenicke told the Board that DWR is in the process of assessing the condition of wetlands in the Delta. This information will be used to identify alternative conveyance routes as part of the BDCP. He indicated that it would be helpful if the ISB would provide direction about how to conduct this effort. In addition, SFEI is working with ERP to develop a landscape level assessment of resources in the Delta although it will take some time to complete this effort.

Chappell mentioned that often there are onerous permit monitoring requirements to assess compliance with a permit. This type of monitoring requires a lot of money but does not add to the scientific body of information. Norgaard noted that this particular barrier is not mentioned in the adaptive management chapter of the Delta Plan. Martin added that as a federal agency, they frequently encounter conflicting permit requirements or the permit requirements conflict with the project's stated purpose. In addition, project funding may be eliminated if permits are not obtained within the same federal fiscal year in which the project is funded.

Healey asked the program representatives how often they set up new conceptual models and then test them. He also wanted to know if conceptual models are being used as carefully thought-out frameworks for the design of new projects. Most of the program representatives explained that they relied on existing conceptual models, and only rarely did they find cause to develop a new model. Zezulak pointed out that often models need a tool or procedures to make effective use of them other than just providing a concept. Chappell said that often conceptual models are project specific and not representative of the cumulative effects of multiple projects, which points to a need for a larger, all-encompassing model at the landscape level. Hastings mentioned that the Delta Plan tasks the Science Program with developing landscape level models. The Delta Plan also attempts to give credit for acquiring property and restoring it when it is most appropriate.

Wiens stated that conceptual models are key, and that a program cannot be structured unless all of the components and how they interrelate is known. He thought that the Delta ISB could play a role in helping to establish a process of how to put a new conceptual model in place. He reinforced that a good model needs to find a balance between complexity and simplicity, and that the Board could establish some guidelines as to where that balance can be found.

Norgaard asked how climate change affects current and future actions for the various programs. Zezulak replied that climate change would alter the geography of acceptable locations for restoration efforts due to water elevation changes. Hoenicke pointed out that in some instances climate change may have positive impacts to the system and cited non-native aquatic species invasions as an example. Martin said that the USFWS was predominantly focusing on restoring fish passage above rim dams. Mueller-Solger said that they are watching for new invasive species invasions that may occur due to climate change.

c. Public Comment Specific to this Discussion

Public comment provided by Mark Rentz, Association of California Water Agencies: Rentz commented on the Delta ISB's role in evaluating the Delta Ecosystem related programs and suggested that it might be helpful to come up with an analytical model that could do multiple variable assessments of potential relationships between significant factors (or stressors) that are adversely affecting the Delta. That would allow management and participants in the process to better evaluate the tradeoffs among various actions.

4. Water Quality

a. Delta Science Program Staff Presentation

Brand provided the Delta ISB with a summary of the responses that were received from programs that were classified as falling under the category of the Water Quality.

b. Discussion with Agency Representatives

The Board then asked that those who were there to speak on behalf of a Water Quality program join them at the table and introduce themselves. They were:

- Mike Mierzwa, FloodSAFE Program Management Office, DWR
- Cindy Garcia, Municipal Water Quality Program (MWQP), DWR
- Jon Marshack, California Water Quality Monitoring Council (WQMC)
- Stephanie Fong, Central Valley Regional Water Quality Control Board (CVRWQCB)
- Shakoor Azimi-Gaylon, Office of Information Management and Analysis (OIMA) at State Water Resources Control Board (SWRCB)
- Rainer Hoenicke, San Francisco Estuary Institute (SFEI)

Collier opened up the conversation by asking the program representatives how coordinated Water Quality monitoring is in the Delta and if it is important to have an independent entity monitor water quality.

Fong explained that the CVRWQCB is in the process of developing a Regional Monitoring Plan (RMP) for the Delta as a more systematic way for managing data and centralizing all of the information. The regional board is modeling their RMP after the San Francisco Bay

RMP. However, since the two systems are different, the Delta RMP will reflect those differences in land use information, and the number of point and non-point discharges.

Marshack explained that the WQMC was required to develop a coordinated monitoring program for the state by December of 2010. The system includes ecosystem monitoring and assessment. They hope to integrate water supply in the future. Their primary challenge in this process has been funding, since the mandate came without a funding source. As a part of that program they made the following recommendations:

- That evaluated water quality data be kept with the associated ecosystem information.
- That data should be housed with the agency or department that collected it, to promote better quality assurance and quality control of data and its metadata.
- That an easy interface needs to be created between the various databases, to allow cross communications and data sharing.
- That water supply information needs to be included with water quality information.

Garcia stated that the primary issue is that there is not a coordinated effort to share data and would like to see more collaboration. The overall problem is a lack of resources (staff and funds). She also explained that her program is drinking-water specific, and has a database of historical data that is predominantly located on the Water Data Library (WDL) housed by DWR. Some of their monitoring stations report in real time to the California Data Exchange Center (CDEC) as well. They are working on integrating the different databases within DWR, but there are no coordinated efforts to do this outside of DWR. She also mentioned that she was beginning to collaborate with some outside agencies, but lack of staff and funding are barriers.

Mierwza told the Board that while he currently works in the FloodSAFE program at DWR, he has worked on the State Water Project and had some prior experience with the Water Quality programs at DWR. He stated that the Bulletin 132 reports are good sources of statewide historical water quality information and that since 1979, DWR has provided a yearly salinity report as part of Bulletin 132. This Bulletin is published every year and a Supply and Reliability report is published every other year. On “one-stop shopping” for water quality data he highlighted that not all data are collected in the same units which can present problems for inputting the data into the models if the modelers are unaware of the differences. He pointed out that there is a danger in separating the data from its collector or source due to a loss of context and metadata. He also stated that the WDL that Garcia mentioned is used as DWR’s records of decision for water supply operations, and the data are quality assured and controlled on a daily basis. However, the WDL needs to be modernized.

Azimi-Gaylon explained to the Board that the SWRCB is trying to make data more transparent by using the California Environmental Data Exchange Network (CEDEN). CEDEN is designed to facilitate data integration and sharing. It is a growing statewide cooperative effort open to

federal, state, county and private organizations interested in sharing water and environmental resource data throughout the state. CEDEN allows the exchange and integration of water and environmental data among groups and is accessible to the public.

Hoenicke stated that SFEI is a regional data center that provides their data to CEDEN. He noted that differing levels of data documentation are needed depending on the questions being asked and how the data will be used. SFEI has decided to use a level of documentation needed to withstand a court challenge.

Meyer asked to what extent does monitoring balance compliance needs with answering scientific questions? Marshack replied that workgroups review the completed work and identify data gaps. They also use a web portal system to make the data available to the public.

Meyer then asked if compliance monitoring is providing the necessary information. Hoenicke said that the questions developed by management clearly drive the monitoring efforts within the developing Delta RMP. Fong then added that the CVRWQCB's efforts on the Delta RMP include identifying all existing monitoring in the Delta, evaluating monitoring to determine if it is appropriate and/or redundant, and reviewing updates of the Bay-Delta strategic work plan proposed by the contaminants work team.

Collier then asked what the Delta ISB should review based on what would help the program participants the most. Marshack offered that the WQMC intends to encompass all water quality monitoring efforts. The Wetland Monitoring Work Group (composed of about 30 organizations) has been the most effective and has developed a monitoring strategy. However, not all of the representatives that attend the workgroup meetings are scientists.

Mierzwa stated that more information is needed on subsidence, topography, and bathymetry. He offered that California Irrigation Management Information System (CIMIS) is providing some of this information, but more is needed. He also explained that a model needs to be developed to link all this information together. Mount stated that the discussion so far was about data gathering and that the speakers have indicated that little is done with the data once collected. He asked if the tools needed to do the work are available. Mierzwai responded that it depends on the question that is being asked. Additional science is needed to collect and validate the data. The challenge is that there is not a model that shows what the natural (historical) hydrograph would have been prior to all of the man-made changes to the Delta. Models that are 2- and 3-dimensional possess a lot of uncertainty.

Collier asked the group if there is any scientific effort to look at the impacts of water quality in the Delta as a result of proposals to shunt water from the north to the south. Garcia responded saying that the MWQP predominantly services the urban water contractors, and is doing this on a

small scale but is limited by inadequate amounts of staff and equipment. The Delta will be impacted by the diversion of water from the Sacramento River. They are just beginning to think about the studies that will be needed to assess these effects. Mierzwa added that MWQP in the past completed studies on organic carbon leaching into water from peat soils in situ. The results were later confirmed as fairly accurate when Jones Tract flooded.

Mount asked about the role of consultants in the state's scientific efforts, as he had heard multiple programs mention contractors that had been hired to assist with workload. Mount wanted to know if this is a healthy trend for the state, and how long it had been occurring. Mierzwa responded saying that in the Jones Tract situation, much of the work was by DWR; however, there is a lot of institutional knowledge held by independent contractors and a loop develops where the consultant becomes the expert on a given issue, causing the state to continue to go to back to them instead of developing their own in-house experts. Marshack said that another issue is the difficulty in recruiting qualified scientists with the level of expertise that is needed, which he attributed to non-competitive salaries and lack of authority to hire. Fong added that another issue is the lack of respect and value given to scientists who are currently in state service.

c. Public Comment Specific to this Discussion

No public comment was given on this discussion.

5. Risk Reduction

a. Delta Science Program Staff Presentation

Brand provided the Delta ISB with a summary of the responses that were received from programs that were classified as falling under the category of the Risk Reduction.

b. Discussion with Agency Representatives

The Board then asked that those who were there to speak on behalf of a Risk Reduction program, join them at the table and introduce themselves. They were:

- Mike Mierzwa, FloodSAFE Program Management Office, DWR
- Dave Mraz, Delta Suisun Marsh Office, DWR
- Peter Buck, Sacramento Regional Flood Control Agency (SAFCA)
- Mick Klasson, consultant to SAFCA

Atwater asked about the science that supports the risk assessments provided by these programs.

Mraz stated that his program had done borings and collected core samples on over 500 sites in their evaluations for the Delta Risk Management Strategy (DRMS) Phase I report.

Buck explained that his group took on the levee vegetation research without funding as an ad-hoc research program comprised of seven agencies. The goal is to collect scientific information about the effects of vegetation on levees, as a parallel effort to studies being conducted by the U.S. Army Corps of Engineers (USACE) to evaluate if the USACE federal policy of no vegetation on levees is appropriate for California and the Delta. A symposium was held on the issue which led to the development of the Levee Vegetation Roundtable. This group has been meeting for about four years and is now called the Central Valley Roundtable for Flood Management. The associated Framework Agreement specifies the need for research and is actively collecting data on risk factors. They hope to have another symposium in 2012 to discuss research results.

Meyer asked Buck if they were coordinating their studies with those being conducted in Puget Sound, where they have similar issues with USACE's no vegetation on levees policy. Buck said that they are coordinating efforts and sharing information.

Mount asked Mierzwa how the Central Valley Flood Protection Plan (CVFPP) is being integrated with Delta flood issues. Mierzwa noted first that a third goal, public safety, needs to be added to the "coequal" goals. He then added that the CVFPP incorporates non-structural elements that include habitat components, that they are currently assessing the consequences of additional flood control elements upstream on the Delta, and that they are required to mitigate any transfer of flood risk downstream. The CVFPP will be released January 2012. The state is responsible for improving levees to the standard they were in 1957. DWR is currently developing a system model to evaluate that requirement and determine what needs to be done.

Mraz stated that there are 1600 miles of levees, of which 1100 are in the Delta. Of those levee miles in the Delta only 350 miles are considered project levees that must be restored to the 1957 levels. However, if you improve levees upstream but not in the Delta, there will be an impact.

Mierzwa disagreed with the implication from Mraz that DWR would only restore upstream levees and leave the rest "as-is." For example, the plan advocates building more bypasses at a cost of \$13-16 billion. He went on to explain that DWR will have to complete the California Environmental Quality Act (CEQA) process and prepare an Environmental Impact Report (EIR) to assess all potential impacts from any proposed levee work that DWR will undertake. DWR will be required to mitigate for potential impacts, which could include improvements elsewhere in the system.

Healey asked how this work relates to habitat restoration in the Delta and if they are coordinating with the ERP. Mierzwa replied that an ecosystem conservation plan would be developed as a part of the CEQA EIR process for the levee and risk reduction project. The EIR will evaluate risk to humans, the ecosystem, and structures. Climate change will be considered as well as new

hydrological information that may occur as a result of permit requirements or other changes in conditions. The framework for a financing plan will be released in 2013.

Mount asked Mierzwa how this affected reservoir operations. He replied that reservoir re-operations are not being addressed in this plan. The long-term plans within DWR are to advocate for better forecasting operations.

Dahm asked if there were any scientific or engineering bottlenecks in the effort to combine ecosystem benefits with flood control. Mierzwa replied that there are definitely bottlenecks. He explained that DWR receives about a 65 percent reimbursement of funds from the Federal government for work on project levees, and so they are required to comply with Federal requirements. DWR has found that it is more economical to do short-term projects than to engage in large-scale planning and development for long-term projects. It's also been found that there is a rule of diminishing returns for the investments made when projects are designed for multiple benefits. Multi-benefit projects result in a cost benefit ratio greater than one which the federal government considers unacceptable. It is also not economically feasible to assess impacts that may occur due to potential service outages resulting from flooding.

Healey asked Buck what scientific information they've found in their studies regarding vegetation on levees. Buck explained that they first developed a list of questions and then designed the research to answer those questions. The following is a summary of their findings.

- To evaluate where the root structure is within the levees they used air knives that remove dirt from the roots to allow an image to be captured with lidar and mapped.
- To evaluate wind throw (top levee trees that are knocked down) they manually pulled down trees with a winch that allowed them to measure impacts and the amount of force that was needed for the tree to come down. They found that it requires a higher wind force than typically occurs in the Delta.
- To evaluate burrowing animal impacts and if their use increases when cover is changed from predominantly woody vegetation to herbaceous vegetation, they conducted surveys in both types of cover. There was a significantly higher amount of usage by burrowing animals in the herbaceous vegetation areas, with roughly 69 burrows in only 100 meters. They concluded that risk could increase as a result of denuding levees of their vegetation.
- To evaluate seepage, and effects of decomposing stumps on seepage (does it make it worse?), they searched for existing stumps and then tested the soils above and below the stump to determine if there was any higher water flow due to the root structure. They found that decomposing tree stumps actually retarded seepage. Seepage issues were more frequently associated with rodent burrows.

Mount asked the group what they thought the major scientific needs are. Mraz replied that it would be of great help to have better geophysical techniques to look at the levee structure

without being destructive in the process. He also wanted to see better seismic stability designs for the levees that did not require changing the levee base structure. Mierzwa added that it would be preferable to have independent external technical reviews performed by non-USACOE employees.

c. Public Comment Specific to this Discussion

No public comment was given on this discussion.

6. Public Comment (For matters that were not on the agenda, but within subject matter jurisdiction of the Delta ISB.)

No public comment was provided.

Meeting adjourned at 4:30 p.m.

Day 2: October 21, 2011 - (9:00 a.m. – p.m. PDT)

1. Welcome

The meeting was called to order at 9:00 a.m., September 2, 2011, by the Chair of the Delta Independent Science Board (ISB), Dr. Richard Norgaard. Eight members of the Delta ISB were present for the meeting: Brian Atwater, Tracy Collier, Michael Healey, Judy Meyer, Jeffrey Mount, Richard Norgaard, Vince Resh and John Wiens. Edward Houde called in to the meeting from a teleconference location. Elizabeth Canuel was absent from the meeting.

No new conflicts or need for new disclosures were disclosed for any of the present Board members.

Delta Science Program Staff in attendance:

Cliff Dahm, Marina Brand, Lauren Hastings and Gina Ford

2. Presentation and Discussion of the Delta Protection Commission's Economic Sustainability Plan (Mike Machado and Jeffrey Michael)

Machado provided a brief overview of the Delta Protection Commission's Economic Sustainability Plan (ESP) and how it relates to the Delta Plan. He explained that the 2009 Delta Reform Act charged the Delta Protection Commission with developing the ESP and requires maintenance of the Delta economy. The ESP is an input for the Delta Stewardship Council to consider in their development of the Delta Plan. The study found that agriculture is the main economic driver in the Delta (9,000 jobs), there are 12 million visitor days per year as a result of recreation and tourism, the Delta is a critical infrastructure hub, Delta levees and sustainability of Delta communities are essential to the sustainability of the Delta, the cost/benefit ratio is skewed when discussion of levee fragility is included, and concluded that implementation of the 2010 version of the BDCP will have a significant impact on the Delta's economy.

The ESP focused on permanent, long-term actions and their impact on the economic sustainability of the Delta. Thus, the ESP does not:

1. Assess short-term economic impacts of proposed capital spending such as construction of levees, water conveyance facilities, habitat, etc.
2. Comprehensively analyze the costs and benefits of all water conveyance options.

A couple of the recommendations that Machado mentioned in a technical memo recently released from DWR that was consistent with the ESP were:

- Improve core, non-project Delta levees to the PL 84-99 standard by 2015 using the existing Delta levee subventions and special project programs.
- Improve many Delta levees beyond the PL 84-99 standard to protect critical infrastructure, existing towns, etc. from earthquake and sea-level rise risks, improve flood fighting and emergency response, and allow for vegetation on the water side of levees to improve habitat.

Machado also felt that the various utilities and infrastructure-related agencies and organizations should be providing a “beneficiary fee” for flood safety and environmental improvements needed in the Delta. He also stated that habitat restoration activities should be developed with no or little impact on the Delta economy. In addition, habitat restoration should first occur on public lands and then consideration could be given to private properties, but only when it was agreed that the land would be sold to the public sector (e.g., willing seller). Future conveyance should continue through the Delta.

Mount asked if the Science Program had conducted a review of the ESP. Hastings replied that an independent review was being organized and would take place in early November.

Norgaard asked Jeffrey Michael, Ph.D. and Director of the Business Forecasting Center at the University of the Pacific’s Eberhardt School of Business, who was hired to develop the ESP, what the challenges had been in developing the ESP. Michael replied that the agricultural data were best but there were limitations on other data sets that because of the geographic units within which they were collected. None were restricted to the Delta boundaries. He found that data collected by zip code instead of by county boundaries were the best. Michael also added that compiling the data took a considerable amount of time, but it provided clear information on the industries and uses in the Delta. He made three science and research recommendations: 1) new data on recreational usage that are regularly updated, 2) an economic sustainability score card system, and 3) additional economic and engineering studies sponsored by the Delta Science Program.

Wiens asked Michael what the economic trends had been over the last decade. Michael replied that conditions within the primary zone had remained steady, changes in agricultural activities reflected national trends, and that recreational use is flat or possibly declining. Meyer asked if climate change had been incorporated into the study and Michael said that the report recommended levee improvements beyond the PL 84-99 standard to accommodate sea level rise.

Houde then asked what was causing the recreational use to go flat, how that related to the rest of the state’s recreational use, and if it could be due to decreases in ecosystem quality. Michael said

that a decrease in water quality may have an impact due to the connection to fish health. He also noted there has been a decline in the use of recreational boating vehicles while the use of paddle sports related recreational equipment has gone up nationwide.

Wiens asked Michael how the plan proposes to maintain and sustain all economic uses of the Delta, when there must be trade-offs since not all uses can continue to grow due to resource limitations. He also stated that some economic drivers are global and asked if global economization was considered in the ESP. Michael replied that global effects were found to be the most important in relation to infrastructure and that a lot would depend on global demands for agricultural products grown in the Delta. They were aware that there would be trade-offs. Machado added that a transition from low value to higher value crops is already occurring in the Delta. Michael stated that he thought that habitat restoration could be accommodated while maintaining and even enhancing agriculture although the open water and tidal wetlands at the scale proposed under the BDCP could not be.

Mount commended Michael on the vast improvements that had been made in the ESP since the first draft and the draft that was released at the beginning of October. He then went on to say that the ESP makes a large assumption that there will be \$1-2 billion in beneficiary fees collected to make levee improvements in the Delta. He also noted that the previous week, DWR had stated that they would only improve levees to the HMP standard. Mount asked what would happen if outside monies were not available. Michael responded that funding is an issue in a number of areas. Mount interpreted this response to mean that this scenario had not been evaluated. Machado stated that this becomes a policy question and that policy should not drive science.

Michael continued to explain that when developing the ESP that they considered various alternatives. They evaluated having the ports contribute to a level consistent with their use of the deep water channels, charging fees for using recreational areas protected by levees, and instituting a toll fee for Highway 12. They found that no one user group wanted to be the only one paying a use fee, hence the recommendation to have a user fee for all beneficiaries. He strongly supported the development of a "utility district" as a possible mechanism to force everyone who uses the Delta to contribute.

Atwater asked about the wide range in cost estimates to bring the levees up to the PL84-99 standard. Michael replied that the estimates were consistent with those found in other reports.

Wiens asked how the coequal goals were factored into a cost benefit analysis of enhancing/maintaining the Delta. Michael replied that the maintain/enhance recommendation was considered the base for all activities and that he thought the coequal goals could be accommodated within that base. The ESP endorses significant environmental restoration in addition to levee repairs and upgrades. However, the large acreages proposed for restoration in the BDCP are not consistent with sustaining the Delta.

Norgaard then asked about the functions and objectives of the Delta Protection Commission (DPC). Machado replied that the charge to the DPC is to coordinate land use for the five counties that are in the Delta. He added that there is representation from the local community and four state agencies. As required by legislation, the Delta Stewardship Council (DSC) will consider

whether or not to adopt the ESP as part of the Delta Plan. Hastings added that the DSC can choose to adopt parts of the ESP or the whole document.

3. Delta ISB discussion to determine which programs to review and a review schedule

Norgaard explained to the Board and the public that this discussion was to decide on how the Delta ISB would proceed. He asked what they should consider to be a 'review' and what the legislation meant by 'all' programs. Norgaard wondered if they would be able to review large all-encompassing programs, and since it would be inclusive of sub-programs, use that to satisfy the directive to review 'all' programs as stated in the legislation.

Resh commented that in prior reviews that he had been involved with there was a great deal of work that had to be put into them, and much of it was done by the entity being reviewed. He wondered if the agencies were willing to put in that kind of time in order to be reviewed. Healey added that it would be important to know how these various agencies and programs felt about being reviewed, and if it was something they would welcome.

Collier suggested first creating bins to determine how they might review the programs, and then develop a process as to how they would do the review. However, Norgaard felt it was important to first discuss the process so that they could better determine what they would need to do next. Norgaard then asked if the Board should require participating programs to provide a self assessment document of around 10 pages or do it as a board. He also questioned if the Board should involve other Delta scientists with the program reviews. Healey answered that the Board should make this a positive experience and to be credible, they would need to invite other scientists.

Wiens felt that the Board needed to encourage the programs to participate in these reviews using some preliminary marketing efforts to establish that the programs would indeed get something out of it for their own use. He proposed a framework approach that included 1) producing the "raw material" needed to review, 2) gathering outside opinions, 3) recognizing that the details will differ with each program under review, 4) determining the quality of the science used, 5) determining how it addresses adaptive management, and 6) understanding the underlying assumptions. Meyer felt the Board also needed to ask about what limits/hinders the agencies from doing "better" science. Collier added that it would be important to assure the agencies that the Delta ISB would help have their scientific results incorporated into the Delta Plan.

Norgaard then asked if there was a way to incorporate development of the Science Plan by the Science Program with the Board's review of science programs in the Delta. Mount and Hastings stated that the Science Plan is due January 2013 with a draft potentially released in September 2012.

Mount suggested that the Board might consider a separate effort to look at the potential reorganization of the science programs and in this manner review all of them to some extent.

Healey wanted to know who the end users of the Science Plan would be and who would pay attention to it as a document. Mount and Meyer replied that the Science Plan would be part of the

Delta Plan. Hastings added that many of the comments received on the Delta Plan mentioned interest in the Science Plan's development.

Norgaard then asked if their review of programs should result in a revised/updated State of the Bay-Delta Science (SBDS). Wiens responded that he saw the SBDS as a side project and asked if working on that would divert the Board's attention from their legislative mandate of reviewing programs. Norgaard thought that revising the SBDS would reach twice as many than would reviews of individual programs. Meyer felt that the SBDS and program reviews were not comparable, as the SBDS is a document looking at the current status and reviews are more forward thinking. Norgaard thought that the SBDS could be morphed to include some review aspects and make it both current and forward thinking. Healey added that the documents would have different target audiences - a review targets policy and decision makers whereas the SBDS is meant for the general public as well.

Collier suggested that the December 1-2 meeting of the Delta ISB consist of an in-depth discussion with the Delta Science Program to organize or propose a higher level (30,000-foot elevation) review structure that might feed into the Science Plan.

Resh asked Hastings about the current status of the Science Plan. Hastings replied that the only product prepared at that time was parts of Chapter 2 of the Delta Plan, and that nothing had been specifically developed for the Science Plan yet. Hastings added that she saw development of the Science Plan as a major task for the next Lead Scientist.

Wiens felt that there needed to be a way to make the reviews cohesive, so that the review methodology was consistent. He supported looking at the organization of science at a very broad scale. The programs could be used as case studies, and therefore not reviewed specifically, but contribute to a broad overview. He further suggested framing the review around how Best Available Science (BAS) and adaptive management are used in various programs. It would still be a review but with the added component of informing programs about BAS and adaptive management.

Healey mentioned the conversations that the Board had with Grindstaff and Isenberg on what they considered were the most and least useful products developed by prior independent science boards under CALFED. The most helpful had been the SBDS and a letter produced on climate change. The least helpful had been a review of performance measures. Healey suggested learning a lesson from this and not conducting a review that would not be helpful.

Mount proposed asking program representatives three questions :

1. Are we providing sufficient high quality science for decision makers?
2. Are their inefficiencies in the system that could be addressed via reorganization?
3. Where are the key places that new resources should be allocated?

Houde liked Mount's ideas but asked if this would take away from efforts to integrate. Norgaard replied that it could still be integrated in the form of a matrix.

Healey stated that he felt the key issue at the moment is the development of flow standards and restated that the most useful product that had been produced by an independent science board was the sea level rise memo produced by Mount. Meyer indicated that she was uncertain where the discussion was leading as a focus on monitoring would be a different kind of review than they had been discussing. Healey replied that a lot of monitoring is going on but it is not being done in an adaptive management context and he reiterated Hastings' statement that she would like to see one well-thought-out adaptive management project actually come to fruition during her career. Healey added that where adaptive management often gets hung up is in the last couple of steps. He suggested that the Board might be able to review programs and assist with those last steps of adaptive management and that a good place to begin reviews would be on flow criteria.

Wiens liked Healey's idea of focusing on flow first as a way to review the various monitoring efforts and provide recommendations regarding how the efforts could be restructured. Healey also suggested that while conducting these reviews they should look for opportunities to prepare short, interim memos that would provide constructive suggestions to those being reviewed.

Norgaard stated that it looked like the Board was reaching consensus on a high level review of current science activities in the Delta that would complement development of the Science Plan.

Dahm responded that the new lead scientist and Science Program staff should be responsible for development of the Science Plan with the Delta ISB providing oversight. He added that any planning document needs to start with what is known at the moment and cited the SBDS, PPIC and IEP reports. However, he felt that the Science Plan will need to focus on the future and suggested using the four policy chapters of the Delta Plan as the structure. In addition, components of the Science Plan will need to be developed to help the Council develop metrics to evaluate implementation of the Delta Plan. He suggested identifying those research areas that need to move forward first.

Healey agreed with Dahm's statement about the Science Plan, and thought that the Board should start with the category of water supply since that is where the flow criteria would fit. He thought it would be important to keep a 30,000 foot view on water supply and take the opportunity to emphasize, especially at that level, that all these topical areas, such as ecosystem and terrestrial components, are interrelated. Mount was concerned about this approach as flow criteria guidelines or objectives that the Board could review have not been developed. Healey replied that he thought that the SWRCB had developed some flow criteria for the San Joaquin, and that they may have established procedures for how they would determine what the flow criteria should be. He suggested reviewing those procedures.

Les Grober, of the State Water Resources Control Board (SWRCB) came forward to address the Delta ISB regarding the status of the flow criteria. He explained that they were quite far along with developing the San Joaquin flow objectives and anticipated finishing them June 2013 and had released draft regulations June 2011. A review of the program envisioned in the draft regulations would be very helpful, as would assembling a panel to guide development of flow objectives for the Sacramento River. This review and guidance could happen now.

Wiens stated that the Delta ISB should focus their first review on flows and that the ISB could start without all the information being complete (e.g., the flow criteria from the SWRCB) by looking at concepts and models. They could also make suggestions regarding the science and processes used to develop the criteria.

Healey stated that the FloodSAFE program appears to be proceeding independently of everything else that is being done and recommended that as they prepare reviews, they look for opportunities to prepare 1-2 page memos regarding their observations. Norgaard asked if the science is sufficient to answer questions about flow and Meyer wanted to know if the science is adequate to inform the adaptive management process.

Dahm stated that when flows are discussed, the discussion is usually restricted to volume, but everyone needs to remember that flow has many more components including frequency and duration. He cited the South African constitution that requires water be prioritized and allocated first for basic human needs, then the environment, then industry, agriculture, etc.

Norgaard mentioned that this item on the agenda, item 3, appears to be merging with item 5 on the agenda: Preparation for next Delta ISB meeting.

Mount stated that the Board should not be doing original work and to remember that they are a review and oversight body.

Resh agreed with Mount, and said that the ideas that were being discussed seemed very ethereal to him. He added that if the Delta ISB wants to look at the organization and structure of scientific programs in the Delta that it would be more concrete to do so based on individual programs instead of collectively by topic.

Healey thought the focus should be on timely and informative interactions with the decision makers, and was not sure that any kind of reorganization was needed. He pointed out that often there is strength in parallel efforts, and that duplication can strengthen evidence or point to concerns. Collier agreed that not all duplicity needed to be removed, and further added that he thought the overall examination of science programs in the Delta should not be conflated with a review of flows. Collier thought that the Delta ISB could provide ideas on how programs and/or processes could be organized differently and/or provide suggestions on how to improve program efficiencies and inform the adaptive management process.

Collier also suggested using the next two to three meetings to discover what is and is not working and then make a recommendation that could be incorporated into the Delta Plan. Wiens stated that if the review went across all programs, rather than focusing on a single program, it would be like skimming. He suggested that the review be anchored or coupled with a more in-depth review of a specific topic.

Mount suggested that the Delta ISB return to a topic-based review and do water supply first. He suggested conducting a series of meetings to evaluate the nature of the problem and identify deficiencies within the science. He felt it would be useful to hear from the users, e.g., the water contractors, NGOs who don't have the funds to conduct the science, and from the legislature.

The end product would be a short memo that would address if the scientific endeavors in the Delta are well organized. This information could be used to inform the Science Plan.

Dahm stated that the ISB's value is to identify germane examples from outside of the system that could be applied to the Delta.

Mount continued that if the Board found the science to be deficient, they could drill down and investigate the cause(s). This information would establish the baseline for what would happen over the next five years. However, Resh cautioned that he would not want the meetings to end up as diatribes about how an individual might disagree with someone else's study.

Mount reiterated that the goal would be determine if there is a problem and if so, the extent of the problem. He suggested three meetings: 1)conduct a scoping meeting to evaluate the problem with the water supply 'users', 2) conduct a second meeting with the working agencies to ask what their needs are and understand how they are organized, and 3) conduct a third meeting to address how science is organized. Mount suggested using this as a template to work through all four policy chapters of the Delta Plan (chapters 4-7).

Collier liked Mount's proposal and added that there may be an opportunity to explain to some of the users that their expectations from science may not be met. He also suggested that the Delta ISB set a goal to complete the water supply topic by March of 2013.

Public Comment specific to this agenda item:

Public comment provided by Val Connor, State and Federal Contractors Water Agency: Connor suggested that the Delta ISB look at other efforts:

1. Various reports have been prepared for state programs that address science issues. The Board could review these reports and evaluate if the programs incorporated any of the suggested changes.
2. Overall, what is missing from review processes of programs is the same as what is missing in adaptive management, the last stages of applying the recommendations.
3. The Department of Fish and Game is currently undergoing an advisory process on what their role in Delta science should be.
4. The WQMC has an existing MOA with CalEPA and the Resources Agency and they need to be evaluated to determine what kind of progress has been made on implementing the MOA.
5. IEP has a Scientific Advisory Group (SAG) and the Delta ISB could review SAG in conjunction with IEP.

Connor also pointed out that state scientists struggle with some basic working level assignments, and the Board might be able to provide some guidelines on how to do some of it.

Norgaard asked Val Connor if she would please prepare and submit a list of all those programs that have existing reviews that she thought might be important for the Delta ISB to look at.

4. Executive Officer's Report (Joe Grindstaff)

Norgaard provided Grindstaff with an overview of how they will proceed with reviews of Delta science programs, in accordance with the Delta Reform Act of 2009. He explained that the Board

would conduct a very high level review of science programs and science in the Delta with a goal of informing the Science Plan. To start, the December 1-2 meeting would focus on a policy and decision-maker audience on what the science needs are and what the next steps should be.

Grindstaff commented that he wasn't sure that anybody had endeavored to document all the science needs of the Delta, but that he thought that would be great. He advised not forgetting to include technical and engineering needs. He told the Delta ISB that he liked the idea of them making specific recommendations to the Council, and that they should even consider making their recommendations to legislators – and not to be afraid to make their recommendations to other agencies like DWR or USACE.

Collier explained that this first meeting in December would be a high level scoping meeting and he doubted that would generate much detail on the needs. Mount added that that it would be a large task to document all those needs given hundreds of agencies involved with science or technical work in the Delta.

Grindstaff then provided the Delta ISB with an update on the status of the Delta Plan. There had been well over 100 comment letters received on the latest draft plan, and those letters added up to well over 1000 pages. He hoped that the Draft Environmental Impact Report (EIR) would be released the following week – but that if it was late they should blame him, because he wants it to be good and doesn't want to release it too soon. Once all the comments are received on the Draft EIR, they will update the Delta Plan and prepare the Final EIR. The updated Delta Plan (seventh draft) and the certified Final EIR will be submitted to the Office of Administrative Law (OAL) for review of the proposed regulations. The deadlines have been moved due to the late release of the Draft EIR, and the DSC will not meet the January 2012 deadline.

Mount asked how the Bay Delta Conservation Plan (BDCP) will fit into the Delta Plan. Grindstaff replied that he meets regularly with Jerry Meral and that there will be a placeholder in the Delta Plan for it. Grindstaff added that the Council is cognizant of their appellate authority and must act accordingly. The BDCP Draft EIR may be released for public review approximately May 2012. He added that the Council is supportive of the BDCP and if the BDCP is not finalized the Council will then consider what should be done to address conveyance within the Delta Plan.

Mount also asked when the consistency determinations will begin to be made. Grindstaff answered that the policies will become regulations once the OAL process is completed and once in place, staff will begin processing consistency determinations, approximately Spring 2012.

Healey asked if staff might be overwhelmed with the workload associated with processing consistency determinations. Grindstaff replied that only the larger projects that affect the coequal goals would be appealed and he did not believe that there would be very many of those.

Grindstaff identified the following as significant issues moving forward:

1. People will need to become more self-sufficient, more conservative.
2. Transparency will have to be developed so that others know what is going on.

3. The Delta Plan incorporates the elevation maps from DFG's Ecosystem Restoration Program (ERP) Conservation Strategy.
4. Address water quality issues.
5. Evaluate stressors other than the lack of habitat and flows.
6. Matching up of new development to existing levee conditions.
7. Determine what needs to be done to enhance, preserve, and protect the Delta in the face of ecosystem restoration, sea level rise, and increasing flood risk.

Healey stated that development of the Delta Plan is proactive but that once adopted, it will be reactive. He asked if the Council will be able to be more proactive. Grindstaff replied that he thought they could as there are more than 100 agencies that deal with Delta issues. He also anticipated that they will follow up on the recommendations (non-regulatory) contained within the Plan and a Council member could file an appeal if no one else did.

Meyer noted that the Delta ISB had not yet investigated the science for changing behavior needed for people to conserve water and become more self-sufficient.

5. Preparation for next Delta ISB meeting

The Delta ISB further discussed ideas on how to move forward with their high level review of Delta science programs. Mount agreed to provide a list of potential invitees that would be 'users' of water, including policy and decision makers. Collier added that the science producers should be included. Mount identified the following categories of 'users': water buyers/contractors (e.g., water districts), non-profits such as the Coalition for a Sustainable Delta and Restore the Delta, heads from federal and state agencies, legislators, and science providers such as universities and IEP. Resh asked if there might be people that could represent multiple groups or one common voice. Meyer asked about local government level being included, and Mount responded that Reclamation Districts should be included.

Wiens stated that they need to be strategic about who is invited since this would only be a two-day meeting and that they should make it clear that the Delta ISB is in the early stages of their review process. He also advised that they should make it attractive to these 'users' to participate in their meeting by explaining the potential negative consequences for not attending.

Healey commented that it has been his experience that participants primarily provide self-serving comments and that it might be more instructive to request that participants describe what they think the goals are of other Delta stakeholders.

Mount thought that the user groups could be split into two-hour blocks. Meyer suggested that the Delta Science Program staff could provide the Delta ISB members with homework materials to review in advance of the meeting.

6. Public Comment (For matters that were not on the agenda, but within subject matter jurisdiction of the Delta ISB.)

Public comment provided by Val Connor, State and Federal Contractors Water Agency: Connor commented on Mount's earlier statement about it being a "sad summer for science". She stated that activities occurring after Wanger's decision have not been productive and that her goal for

Delta Independent Science Board Meeting
October 20-21, 2011

her program is that scientists eventually outnumber attorneys on staff at SFCWA. Overall Connor agreed that it was a sad summer, but her sadness was that the money went to litigation and not to research.

Meeting adjourned at 3:10 p.m.